THE BRAINWAVE FACTORY

Data Transfer Unit

USER MANUAL

DTU(wifi)

Region : Europe 2025V2.0

www.solenso-power.com
contact@solenso.pro

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1. Terminals Introduction

1.1 Read This First

This manual includes important instructions for installing and maintaining the Solenso Data Transfer Unit (DTU)

1.2 Safety

Instructions

Symbol	Usage
	Indicates hazardous situations that can result in deadly electric shock hazards, other serious physical injuries, or fire hazards.
	Indicates directions that must be fully understood and followed in their entirety to avoid potential safety hazards including equipment damage or personal injury.
	Indicates that the described operation must not be carried out. The reader should stop, use caution, and fully understand the operations explained before proceeding.

- Note that only professionals may install or replace DTU.
- Do not try to repair the DTU without approval from Solenso. If the DTU is damaged, send the DTU back to your installer for repairing/replacement. Disassembling the DTU without approval from Solenso will invalidate the remaining warranty period.
- Read all instructions and warnings on the technical specifications carefully.
- Do not use Solenso products in a way that is not suggested by the manufacturer. Doing so may cause death or injury to persons or damage to the equipment.

1.3 User

This manual is intended for use by professional installation and maintenance personnel only.

1.4 Support and Contact Information

If you have technical queries concerning our products, contact your system installer or distributor.
If further support is required, contact Solenso' support at this link.

- **https://www.solenso-power.com**
- **Solenso Technical Service Center: contact@solenso.pro**

2. Solenso Microinverter System

2.1 Microinverter

It converts the DC output of PV modules into grid-compliant AC power. It sends the output information of PV modules and the operation data of the microinverters to the DTU, which is the hardware basis of module-level monitoring. With conversion efficiency up to 96.5% and MPPT efficiency up to 99.9%, Solenso microinverters are among the high-quality microinverters in the world.

2.2 DTU

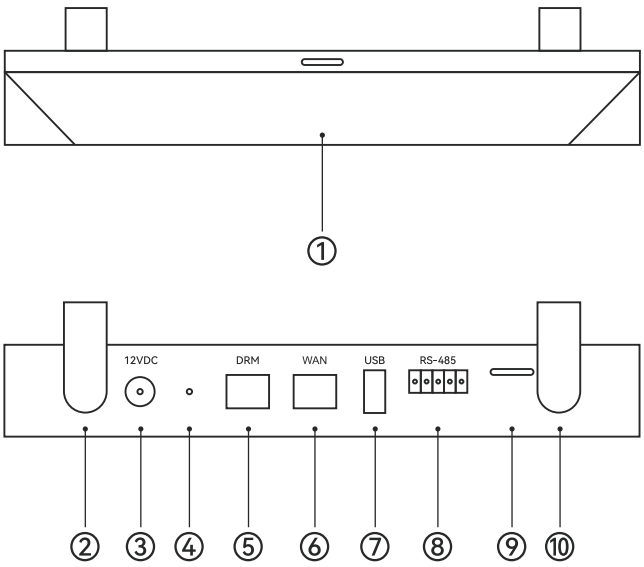
The DTU is a key component in the Solenso microinverter system. It works as the communication gateway between the Solenso microinverters and the Solenso Monitoring Platform. The DTU communicates wirelessly with the microinverters via Sub-1G Proprietary RF, and collects the operation data of the system. Meanwhile, the DTU connects to the Internet via the router and communicates with the Solenso Monitoring Platform. The microinverter system operation data will be uploaded to the Solenso Monitoring Platform via DTU.

2.3 Solenso Monitoring Platform

It collects the operation data and status of the microinverters in the system and provides module-level monitoring for users and maintenance staff. The following diagram shows the operation of the Solenso Microinverter System.

3. Interface Layout

3.1 Interface Layout



Item	Description
1	Pilot lamp
2	Sub-1G antenna
3	Power Port
4	Resetting
5	DRM port
6	WAN port
7	USB port
8	RS-485 port
9	Card slot
10	Wi-Fi antenna(2.4G)

3.2 Export Management Function (RS485 port)

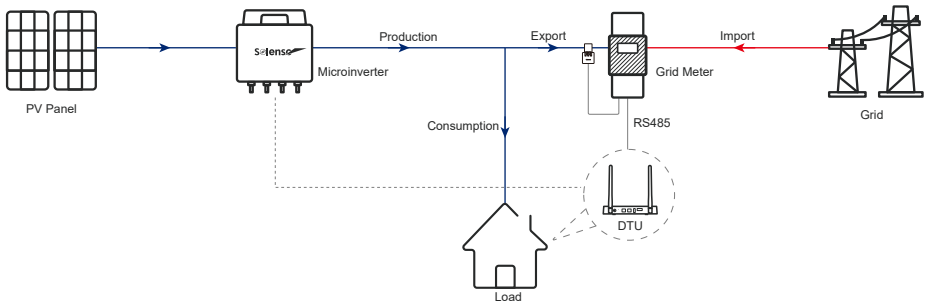
• Devices Required

a) Solenso Microinverter: 4-in-1 Unit, 2-in-1 Unit and Single Unit
b) DTU
c) Meter: Chint Meter (DDSU666)/Chint Meter (DTSU666)

• Export Control Type

Type 1: Zero Export: limits the export power to zero to prevent the generated power fed back to the grid.
b) Type 2: Export Limit: limits the export power within a certain value.
c) Type 3: Production and Consumption Monitoring: enable to measure the PV generation with high accuracy.

• Installation Diagram



Note: Refer to the “Solenso Zero Export Technical Note” for more details

3.3 Remote Active Power Control (RS485 port)

In some countries, it might be required that the generating plants should be equipped with a logic interface (input port) to cease the output of active power or limit active power to a regulated level. This logic input can be the RS485 port, Ethernet port, and so on. The DTU provides the MQTT protocol over RS485 port for this remote active power control. For more information, refer to the “MQTT Implementation Technical Note”.

3.4 Local Installation Assistant

Local Installation Assistant is a new function integrated with DTU. Download the “Solenso Pro” (for installer/distributor use only) before use.

Android

IOS

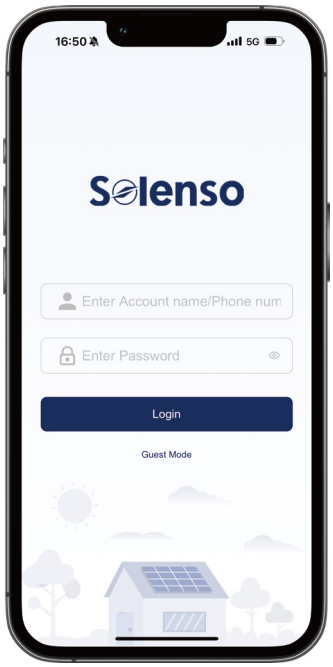
- Complete the Wi-Fi configuration in one step.
- See how many microinverters under this DTU are working properly (and the details for each microinverter) and how many are abnormal (and the details for each microinverter) at a glance through the plant overall inverter status indication.
- Add connection status, which displays the signal strength between each microinverter with connected DTU, so that the installer can adjust the DTU installation location accordingly. This function simplifies DTU installation and avoids a second visit for installer due to the poor connections between DTU and certain microinverters.

4. Plant Creation

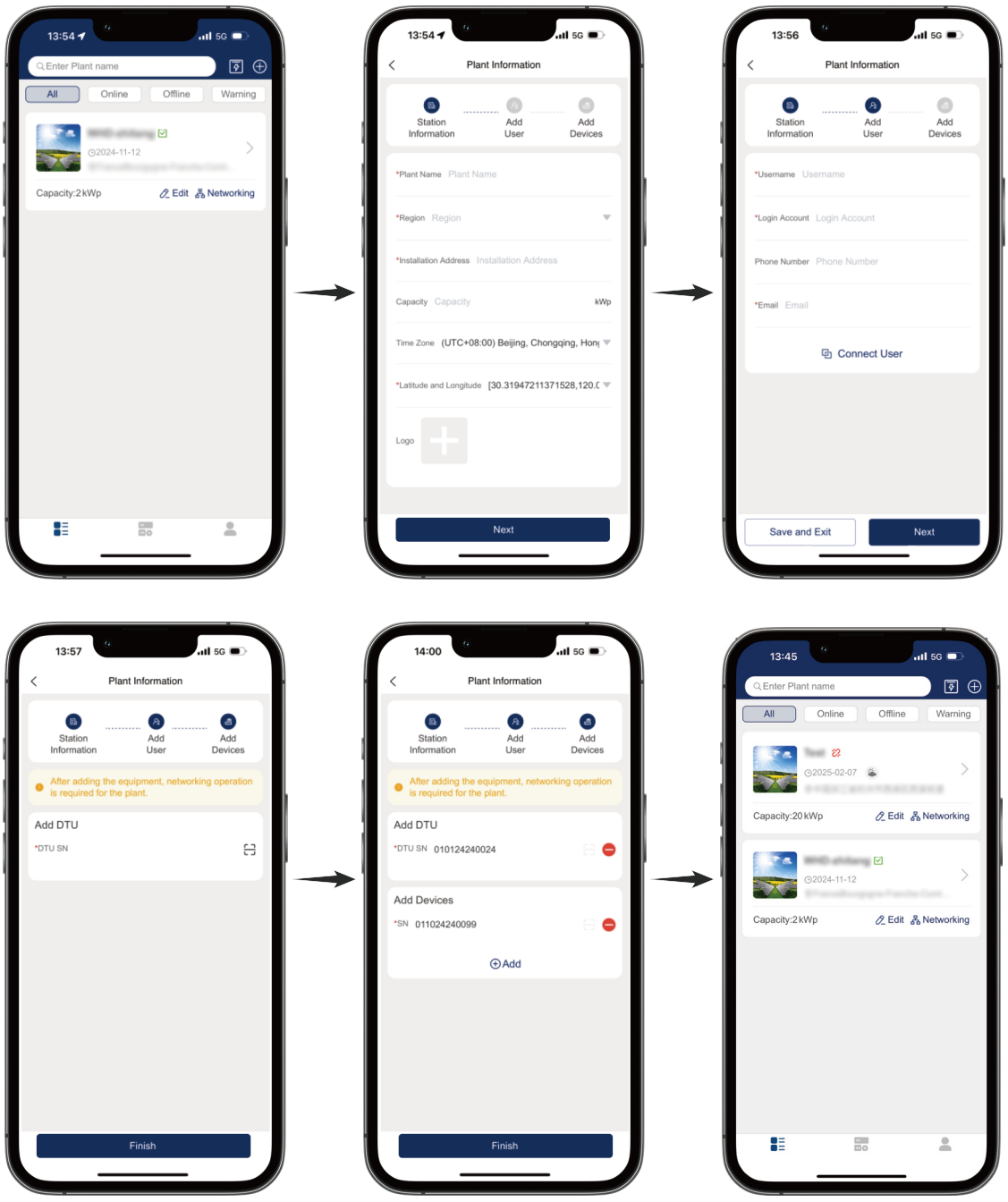
This is a brief description of how to create a new site.

4.1 Power Plant Creation

1. Open the app and log in with your installer account and password. If you are a new installer, please apply for an Installer account from your distributor in advance.



2. On the second page, select “ ⊕ ” on the right top side of the page to add station. Follow the on-screen instructions to fill in the station details and press “Next”.



Note: The initial password of the end-user account is: 123456
It can be edited by the cleints on the Personal Center of My Solenso.

The newly-added site will be displayed on the station list under the Installer account. Please hold on for a while. Subsequently, the station will go live, please click ”Networking”, then you to view the IDs of all microinverters.

5. DTU Installation

5.1 System Capacity

DTU is capable of monitoring up to 100 microinverters. If the communication between the DTU and the microinverters suffers interference caused by installation conditions, microinverters that the DTU can monitor may be reduced.

Note: Max. monitoring quantity is for open space with ideal installation conditions described in both the DTU and microinverter manuals. The distance between the microinverter and the DTU needs to be within the required range.

5.2 Basic Conditions Required

Before installing the DTU, ensure that the site meets the following requirements:

- Standard 220 VAC power outlet
- Stable broadband Internet connection
- Router with Ethernet port

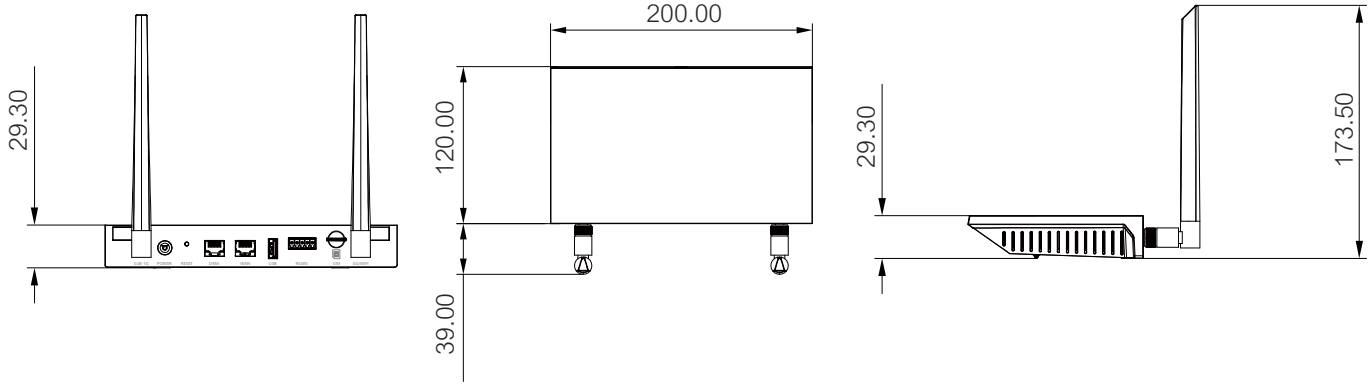
Environmental requirements for DTU installation:

- Away from dust, liquid, acids, or corrosive gas
- The temperature should be between -20ºC and 55ºC

If you plan to install the DTU on the wall, prepare two #8 (4.166 mm diameter) screws and a screwdriver in advance.

5.3 Dimensions

(Unit: mm)



5.4 System Installation Steps

Work that needs to be done on site:

1. Install the PV modules and microinverters
2. Locate the DTU
3. Connect the microinverter to the grid
4. Plant creation

5. Power on DTU
6. Connect DTU with Internet
7. Use Micro Toolkit for onsite inspection (optional). Check the communication between microinverters and DTU
8. Mount the DTU on the wall (optional)
9. Add microinverter ID
10. View data on Monitoring platform

5.5 Preparation

5.5.1 Download the “Solenso Pro” App

Android IOS

5.5.2 Check the box for following items:

- Two Antennas
- Adapter
- 5 Pin Plug

5.5.3 Choose the way DTU connects to the Internet:

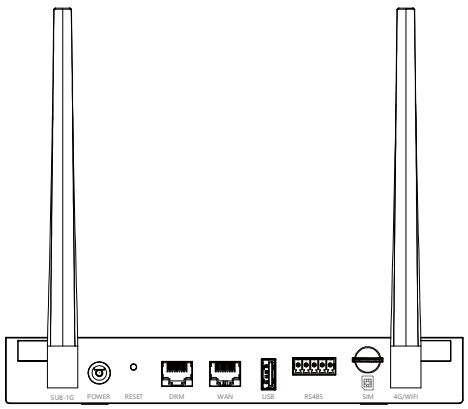
Use Wi-Fi or Ethernet. Prepare for the following items, if needed:

- Ethernet Cable (if Ethernet option is selected)
- Solenso Pro (App for Installer)

5.6 Install the DTU

Step 1: Install the antennas

Take the two antennas out of the box, and screw the 2.4G antennas into the Wi-Fi port and Sub-1G antennas into Sub-1G port.



Note: If the DTU installation location is inside a metal box or under a metal/concrete roof, an extended Sub-1G cable or Sub-1G suction antenna is suggested, It can be purchased from a local electrical.

Step 2: Choose an installation location

- Install on the top floor to increase signal strength
- Install near the center of the PV array
- Install at least 0.5 m above the ground and more than 0.8 m away from corners

Note: Please do not install the DTU directly above metal or concrete to prevent signal interference.

Step 3: Choose the installation method

Option 1: Mount the DTU on the wall

- Screw the bracket on the wall, please use at least two screw holes
- Align the two holes on the back of the DTU with the screws and hang them up

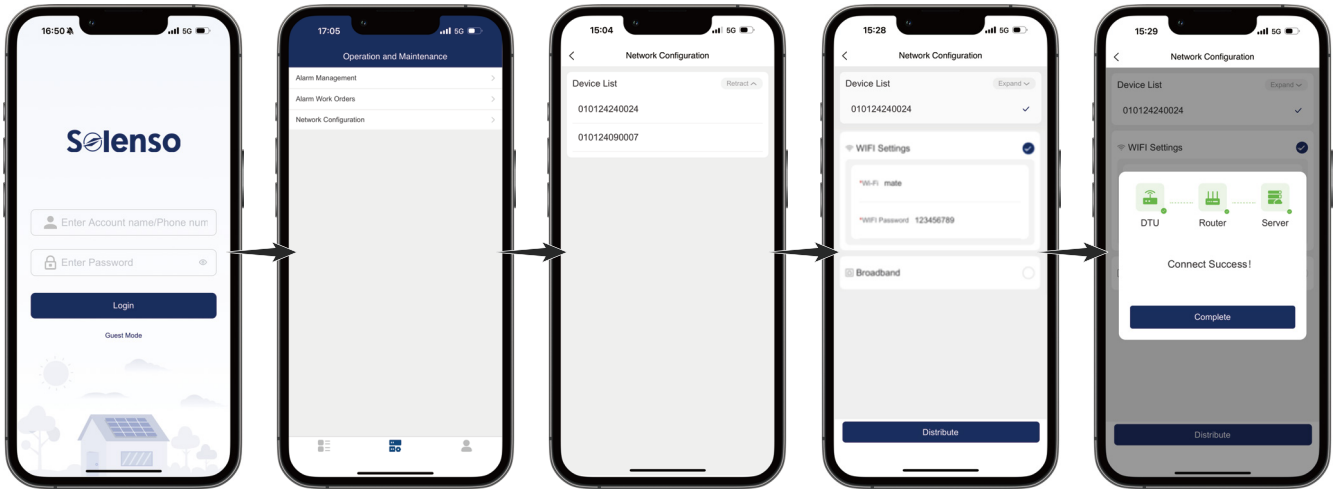
Option 2: Place the DTU on the table

- If you place the DTU on the table, please make sure the antennas are perpendicular to the table
- Plug in the power adapter to power the DTU

Step 4: Internet Settings

Note: Please turn on Bluetooth before the Network Configuration.
If the plant is not created, the DTU will not be able to connect to the server.

- Open the “Solenso Pro” and log in using a smartphone/tablet.
- Select "Network Configuration" .
- If using a WiFi connection, select the WiFi settings, enter the WiFi password and account, then click “Distribute”.
- If using an Ethernet connection, insert the network cable into the DTU network port, select "Broadband", and then click “Distribute”.



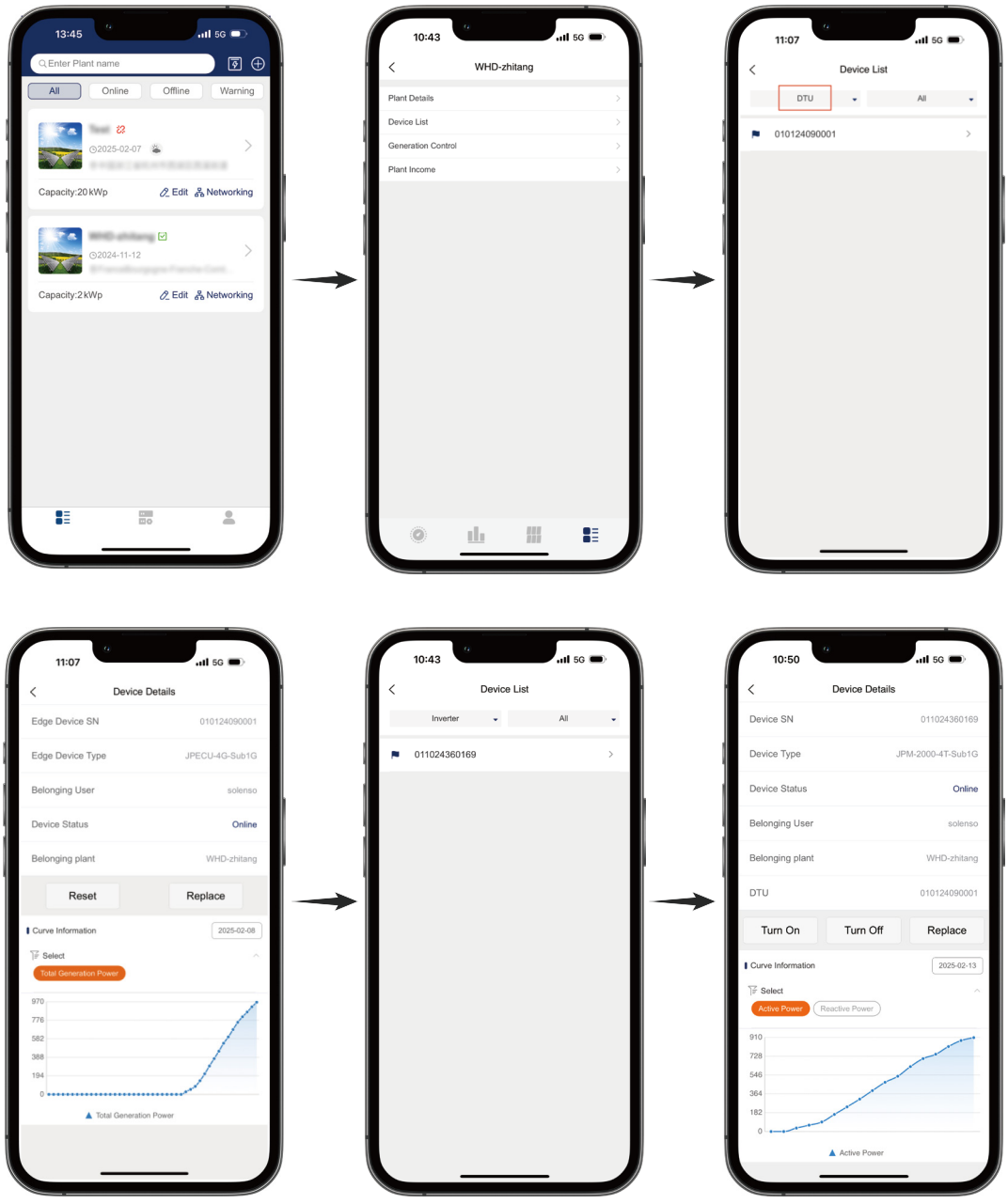
6. Data Modification and Viewing

6.1 Connect to the DTU

Please check the 5.6 Install the DTU-step 3.

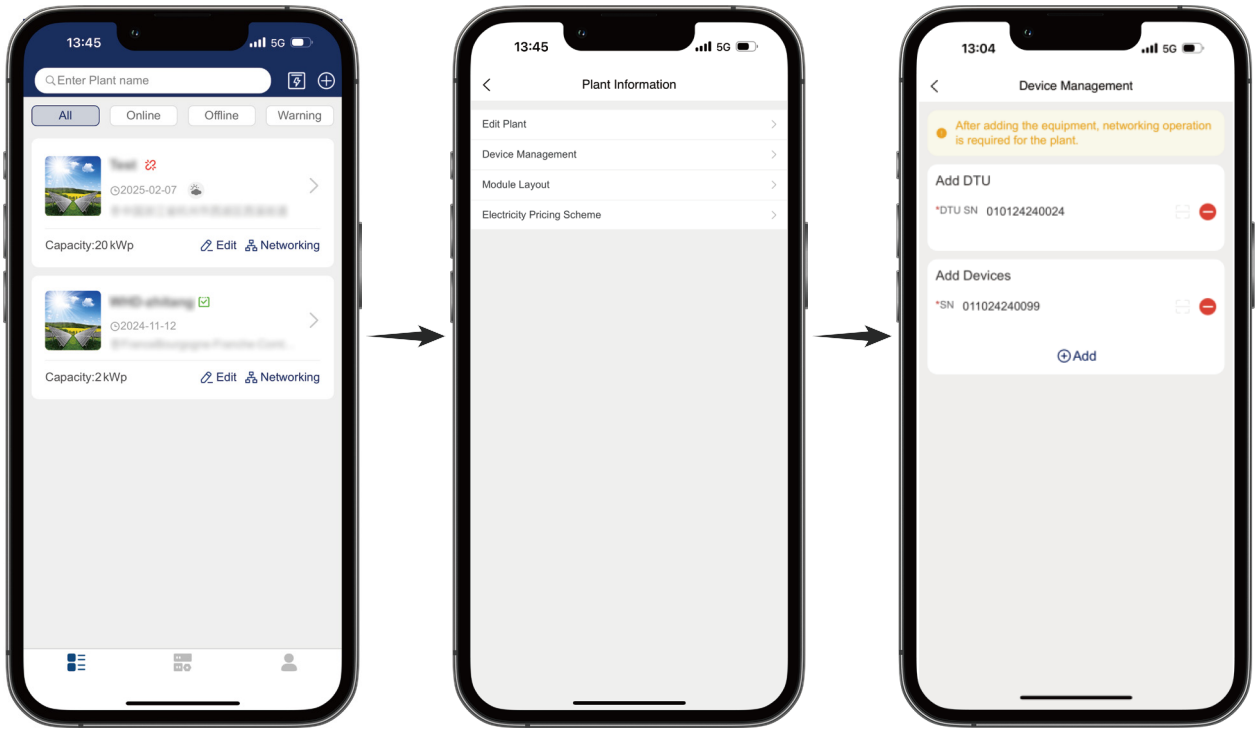
6.2 Data Overview

Select the newly-added site. Click the “Device list”, you can see the detail infromation of DTU and microinverters.



6.3 Add Microinverter

Select the already created site and click on the "Edit" button.Then select the ”Device list” , Then you can add new devices following the same steps as before.



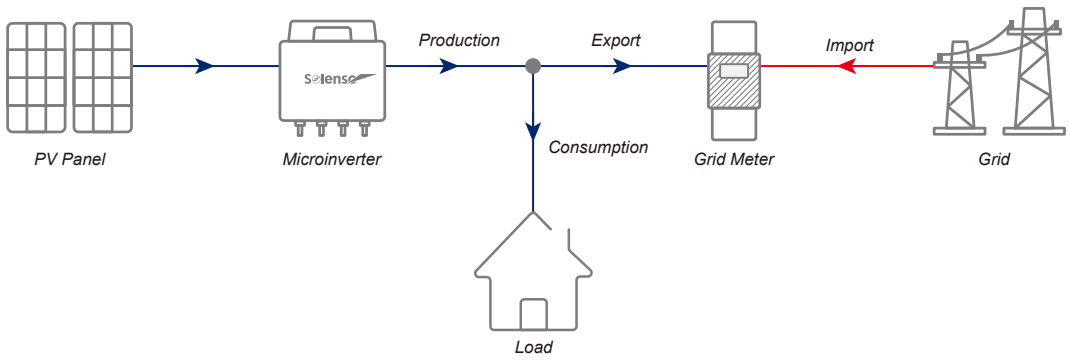
7. Zero Export Function

7.1 Brief Introduction of Export Management

To maintain the safety and quality level of the grid network, some countries' local grid authorities limit the PV generated power exporting to the grid. To meet this requirement, Solenso has developed an Export Management Solution, which can help users install a bigger PV system without violating export regulations.

7.2 Terms and Definitions

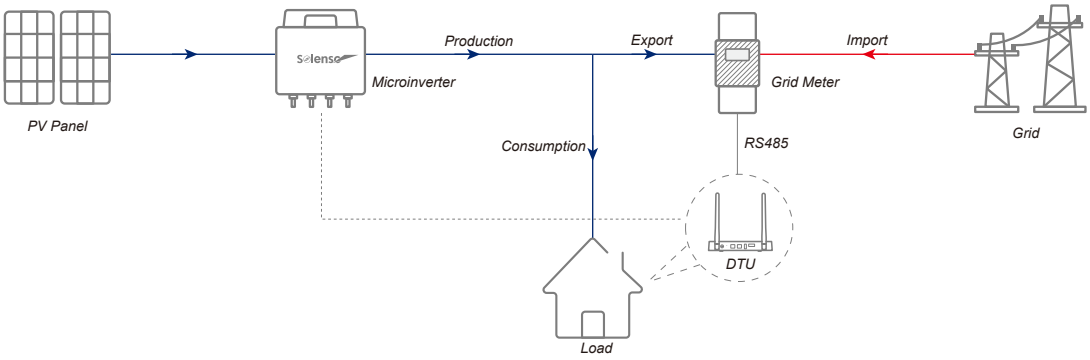
- **Export:** The power export to the grid.
- **Production:** The power produced by the PV microinverter system.
- **Consumption:** The power consumed by the local loads.
- **Solar Meter:** A meter installed at the output of solar microinverters and reads the power/energy produced by the PV microinverter system.
- **Load Meter**: A meter installed at the load consumption side and reads the power/ energy consumed by the local load.
- **Grid Meter:** A meter installed at the grid connection side and reads the power/energy exported to the grid.
- **Current Transformer** (CT): A transformer clips on the wiring to detect the current flow.
- **Meter**: A device measures for the energy flow.
- **DTU-SLV**: Solenso Data Transfer Unit, receive the data from microinverter and meter, then upload them to the monitoring platform.



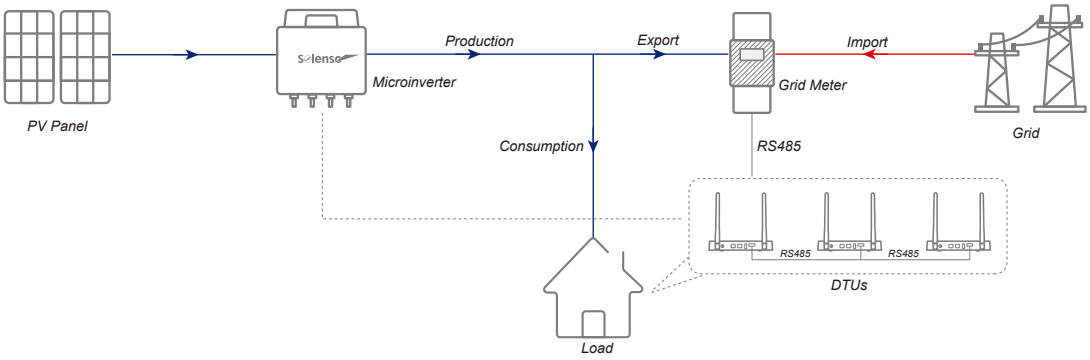
7.3 Introduction of RS485 connection

Within the Solenso Export Management system, both the Solenso gateway DTU-SLV and the meter are essential components. The meter can be deployed either on the load side or the grid side to accurately measure consumption or exported power. Should export control be activated, the DTU-SLV will modulate the PV power generation to guarantee that the exported power remains within the user-defined limits. Conversely, if the user's sole intention is to ascertain precise PV generation figures, the meter should be installed on the solar side. In this scenario, the DTU-SLV will aggregate data from this meter, and the user will subsequently be able to view the PV generation data on the Solenso monitoring platform.

If there is only one DTU-SLV used in small size PV system. The RS485 port of the meter is connected directly to the RS485 port of DTU-SLV using shielded twisted pair.



If there are more than one DTU-SLV involved in the installation. The RS485 port of the meter is connected directly to the RS485 port of DTU-SLV in turn.



7.4 Installing the Export Management system

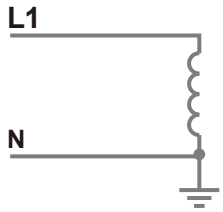
To install the Solenso Export Management, please follow these steps. Prior to installation, ensure that you have the necessary permissions for the system. If you do not, please reach out to your dealer or Solenso's technical support team for assistance.

Step 1: Confirm the export control type:

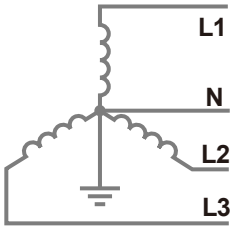
- **Type 1:** Zero Export: Set the export power to grid as zero. The meter can be installed at the load or grid side.
- **Type 2:** Export Limit: Limit the export power to grid within a certain value. The meter can be installed at the load or grid side.
- **Type 3:** Production and Consumption Monitoring: Display the PV production and consumption under a high accuracy level. To display the consumption, the meter can be installed at the load or grid side. To display the PV production, the meter should be installed at the solar side.

Step 2: Confirm the Grid type: the grid type varies in different countries, please choose the right grid type accordingly.

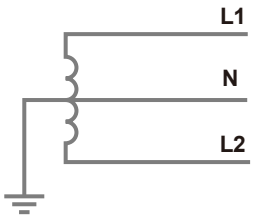
- **Single Phase 230V:** Mainly for residential systems in most countries except North America and South America. The phase voltage may vary from 220V to 240V. The outputs of microinverters are connected between live line and neutral line, L1~N.



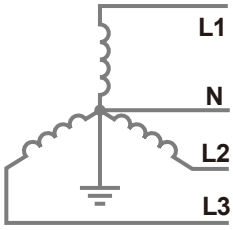
- **Three Phase 230V/400V:** Mainly for commercial systems in most countries except North America and South America. The phase voltage may vary from 220V to 240V. The outputs of microinverters are connected between live line and neutral line, L1~N, L2~N or L3~N.



- **Split Phase 120V/240V:** Mainly for residential systems in North America and South America. The phase voltage may vary from 110V to 120V. The outputs of microinverters are connected between two live lines, L1~L2.



- **Three Phase 120V/208V:** Mainly for commercial systems in North America and South America. The phase voltage may vary from 110V to 127V. The outputs of microinverters are connected between two live lines, L1~L2, L2~L3 or L3~L1.

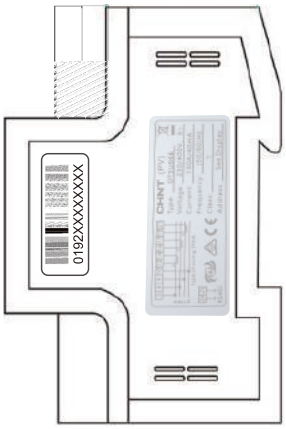


Step 3: Confirm the loads' capacity for CT and Meter type selection:

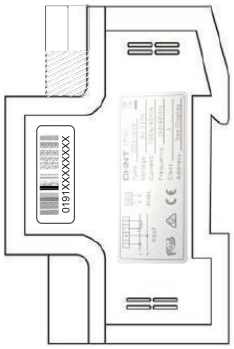
Please make sure the CT/Meter range can cover the maximum loads power or PV system generating power.

Note: Please refer to Appendix B for Meter and CT model selection.

Before installing the Chint meter, please record the meter SN for further use. Please refer to the pictures below for the Meter SN position:



For DTSU666



For DDSU666

***Note*:** Please make sure the meter SN in one system will not be duplicated.

Step 4: Prepare the shielded twisted pair RS485 cable with the proper length.

Step 5: Complete the Meter and CT wiring base on the system requirement (Please refer to Appendix A).

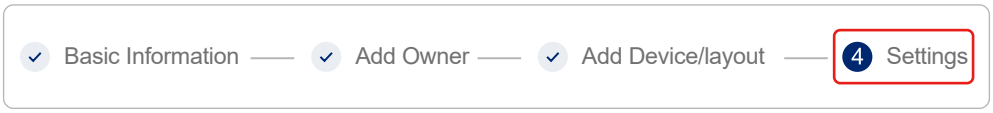
***Note*:** The installation direction of the meter and CT is very critical for export control and data display, please refer to Appendix A for more details about the proper installation of CT and meter.

Step 6: Use RS485 cable connect 24 port from the meter to A port from DTU-SLV and 25 port from meter to B port from DTU-SLV (Please refer to Appendix C for more details).

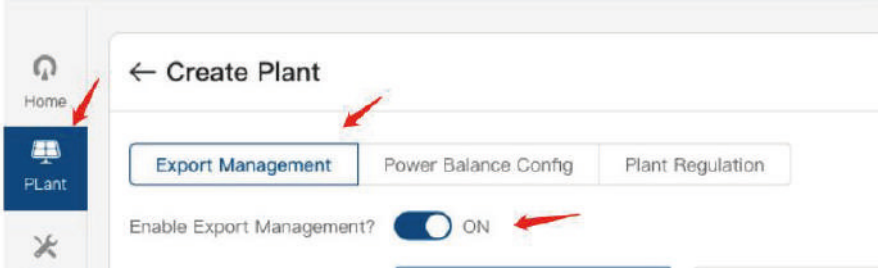
Step 7: Connect the power cable to DTU-SLV and power the DTU-SLV on.

Step 8: Complete the settings on the platform.

a. Create a new station from the monitoring platform and click "Settings"



b. Find 'Plant" -> " Export Management"->Enable "Enable Export Management"

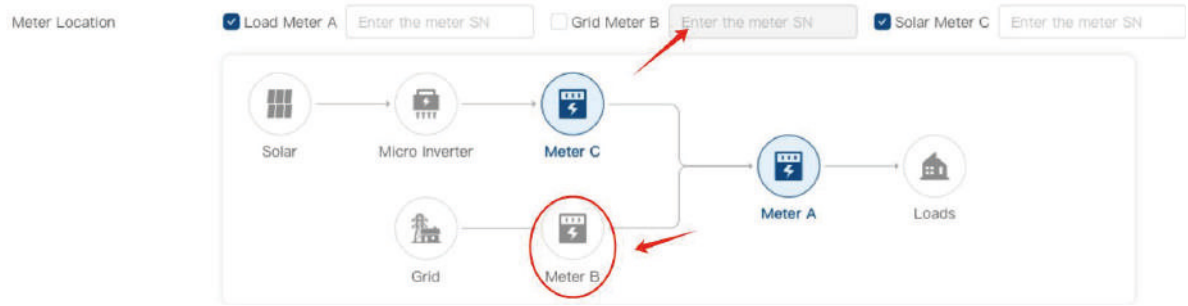


c Select your Grid type

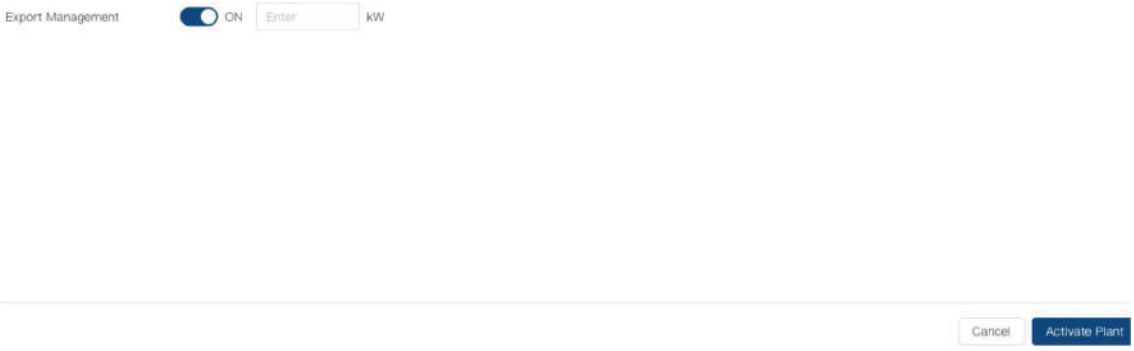
1. Single-phase Grid select 230V
2. Three-phase Grid select 230V/400V

3. Choose the location that meter has been installed, usually the meter is in B inaction, And **input the Meter SN in Grid B**.

   Note: Please make sure the meter SN in one system will not be duplicated.



4. Enable the Export Power Limit function to enable the export control, input the limit value and click“ Activate Plant” to complete the station creation.



7.5 Main Web Pages Display Introduction

7.5.1 “Dashboard” page under “Solar Station”

Part A (Plant Overview):

- **Power Ratio**: Percentage of Real-time Power / Installed Capacity.
- **Energy Today**: Total energy generated.
- **Energy this Month**: Energy generated this Month.
- **Lifetime Energy**: Energy generated lifetime.

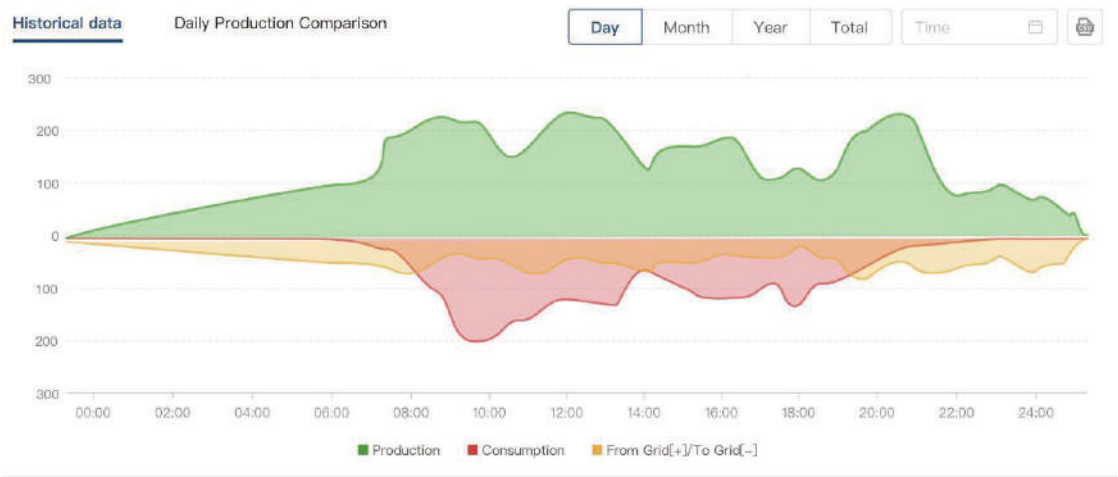
Part B (Production & Consumption):

- **Self-consumption**: Percentage of production / consumption.
- **Self-production**: Percentage of consumption / production.

Note: Meter installed at the grid side.

Part C (History Data):

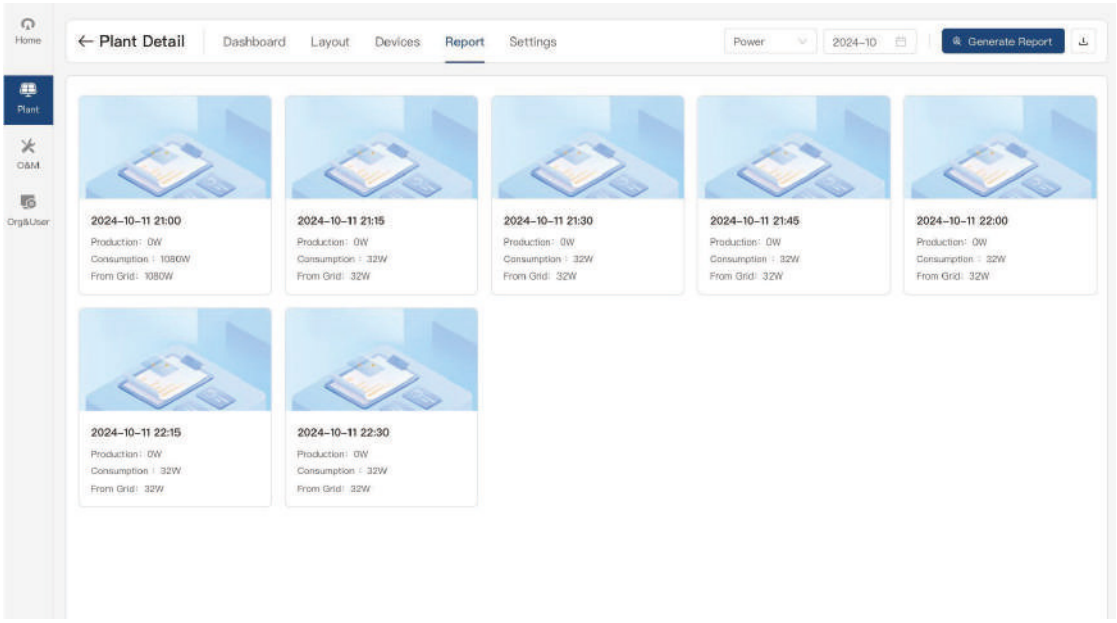
- **Production**: The power generated from PV system.
- **Consumption**: The power loads used.
- **Self-consumption**: Percentage of production / consumption.



***Note**:* there might be a point of time that from the diagram it shows the Solar Generated power is higher than Consumption Power, which is caused by the data obtain timing from meter and DTU-SLV is inconsistent. It will not affect on the actual power limit.

7.5.2 Report generating

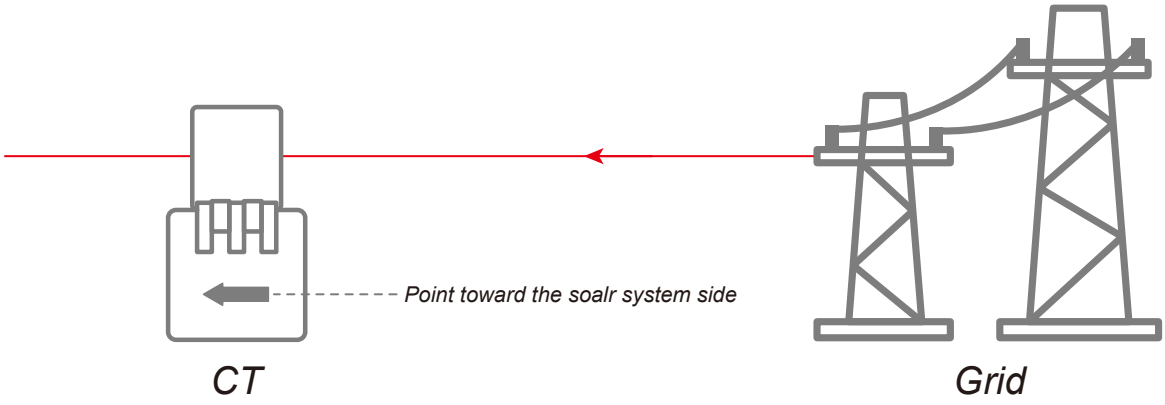
You can generate the report by clicking “O&M” - “Report Query”.



7.6 Appendix A: Guideline for CT/Meter Installation

7.6.1 CT Installation

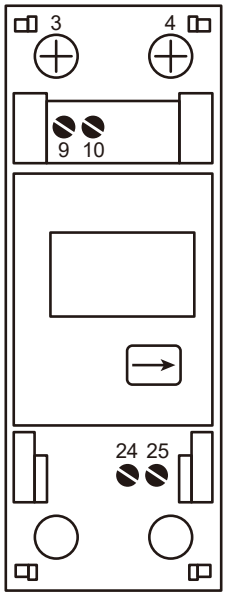
Please make sure the CT (as known as Current Transformer) has been installed in the right direction, otherwise will affect the current readings and Meter function. Please make sure **the CT direction must beto the solar system side.**



7.6.2 Meter Installation

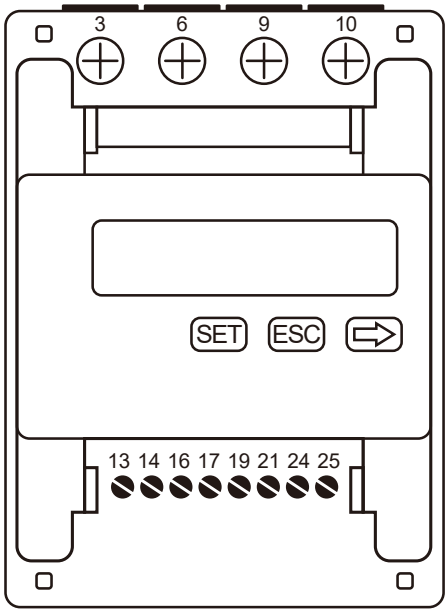
◆ **Meter Port Description**

a. Chint DDSU666 Single Phase Meter (Via CT)



- Port 3: input port, connect to the L line;
- Port 4: connect to the N line;
- Port 9: connect to the white wire from CT;
- Port 10: connect to the blue wire from CT;
- Port 24: connect to the A port from DTU-SLV RS485 port;
- Port 25: connect to the B port from DTU-SLV RS485 port.

b. Chint DTSU666 Three Phase Meter (Via CT)



Phase A

- Port 13: connect to the white wire from CT for Phase A;
- Port 3: connect to the L line from Phase A;
- Port 14: connect to the blue wire from CT for Phase A

Phase B

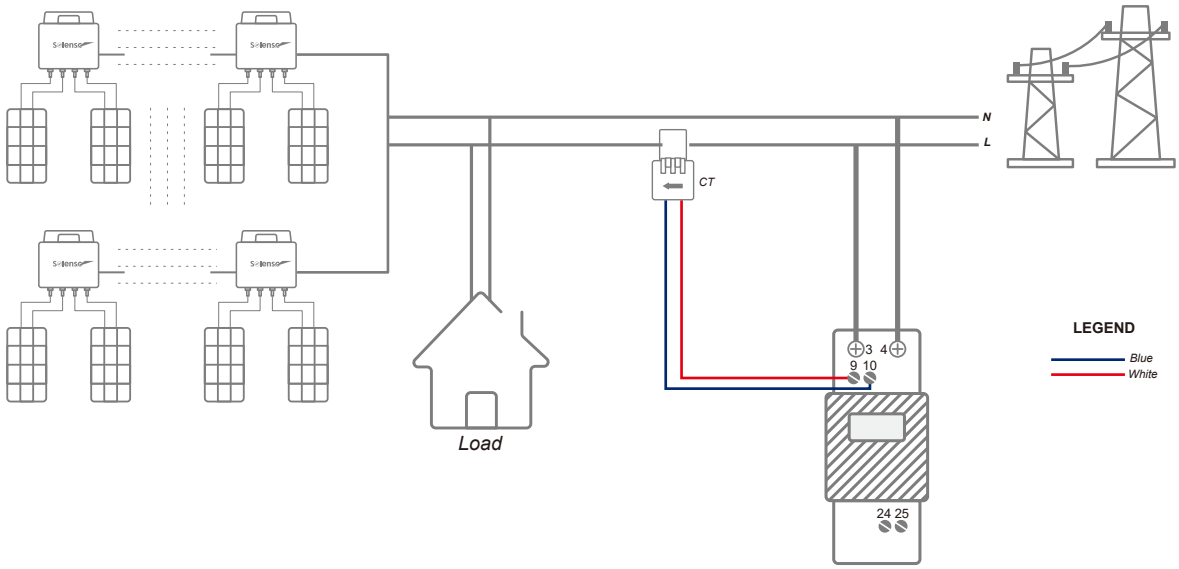
- Port 16: connect to the white wire from CT for Phase B;
- Port 6: connect to the L line from Phase B;
- Port 17: connect to the blue wire from CT for Phase B;

Phase C

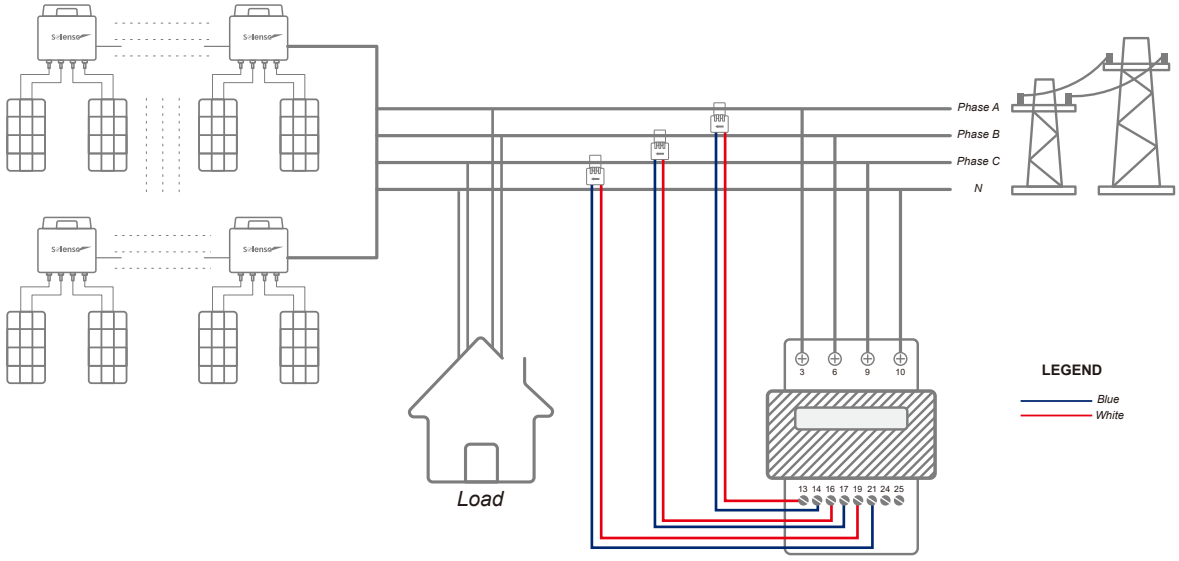
- Port 19: connect to the white wire from CT for Phase C;
- Port 9: connect to the L line from Phase C;
- Port 21: connect to the blue wire from CT for Phase C;
- Port 10: connect to the N line from Grid;
- Port 24: connect to the A port from DTU-SLV RS485 port;
- Port 25: connect to the B port from DTU-SLV RS485 port.

◆ Installation Diagram for Chint (Via CT)

a. **Single Phase Meter DDSU666, the CT➞ must point to the solar system. (If the direction is not towards the solar system, it will alarm "Wiring Wrong Alarm" in Solenso Pro)**



b. **Three Phase Meter with Three Phase system (230V/400V, via CT)**
The CT ➞ must point to the solar system. (If the direction is not towards the solar system, it will alarm "Wiring Wrong Alarm" in Solenso Pro)



7.7 Appendix B: How to choose Chint meter and CT for your Export Management station

There are 2 types of Chint meter and different types of CT that you can choose base on the actual installation requirement.

7.7.1 Meter & CT Types

Meter Model	Type	SN	Description
DDSU(CT-100A)	Single Phase	0191XXXXXXXX	Compatible with 100A/5A
DTSU(CT-3x100A)	Three Phase	0192XXXXXXXX	Compatible with 100A/5A

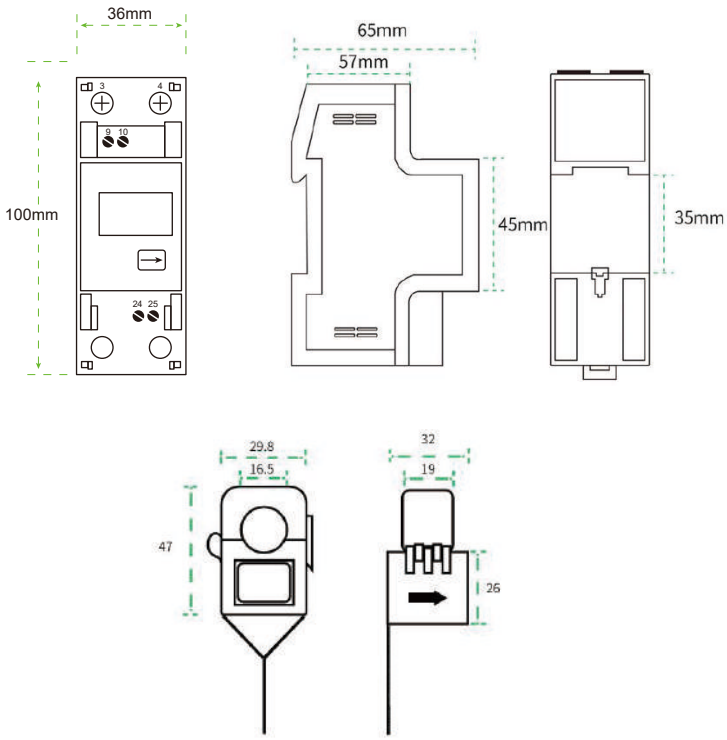
◆ DDSU666 (CT-100A) Parameters

Electrical Parameter	
Model	DDSU666 New-Via-CT-100 A
Reference voltages	230 V
Operating voltage range	0.7 Un~ 1.3 Un
Current specification	100 A / 40 mA
Nominal working temperature	-25℃ ~ +25℃
Type	Through the current transformer to the meter
Mechanical Parameters	
Dimensions	36 x100x65 mm
DIN rail mounting dimensions	35 mm

Power Factor	Value range of current	Error Accuracy
1	0.02 In ≤ I ≤ 0.05 In	+1.5
	0.05 In ≤ I ≤ I max	+1.0
0.5L	0.05 In ≤ I ≤ 0.1 In	+1.5
0.8C	0.1 In ≤ I ≤ Imax	+1.0

Note:

- In: Secondary rated current of current transformer
- L: Inductors
- C: Capacitors



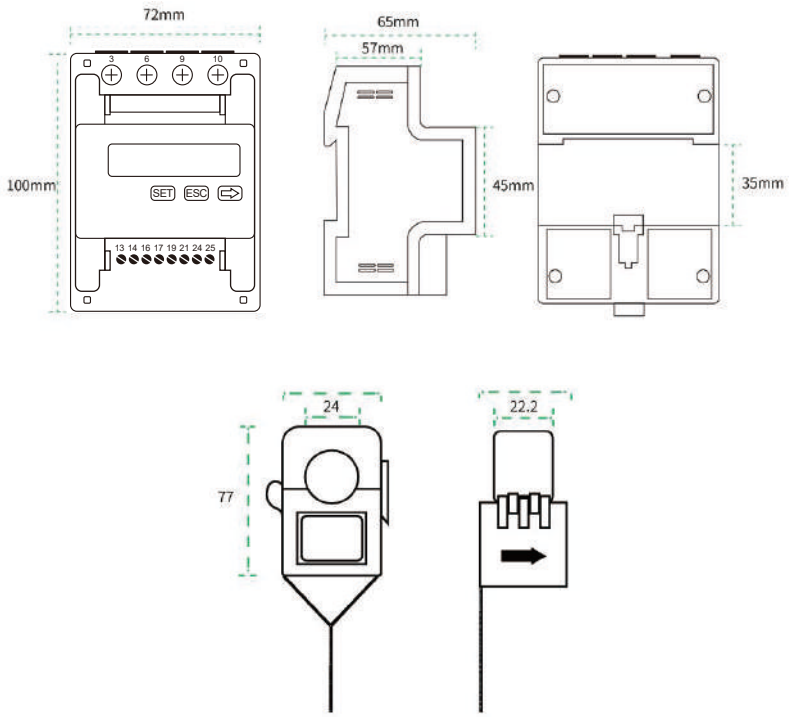
◆ DTSU666 (CT-3x100A) Parameters

Electrical Parameter	
Model	DDSU666 New-Via-CT-100 A
Reference voltages	230 V
Operating voltage range	0.7 Un~ 1.3 Un
Current specification	100 A / 40 mA
Nominal working temperature	0
Type	Through the current transformer to the meter
Mechanical Parameters	
Dimensions	36 x 100 x 65 mm
DIN rail mounting dimensions	35 mm

Power Factor	Value range of current	Error Accuracy
1	0.02 In ≤ I ≤ 0.05 In	+1.5
	0.05 In ≤ I ≤ I max	+1.0
0.5L	0.05 In ≤ I ≤ 0.1 In	+1.5
0.8C	0.1 In ≤ I ≤ Imax	+1.0

Note:

- In: Secondary rated current of current transformer
- L: Inductors
- C: Capacitors

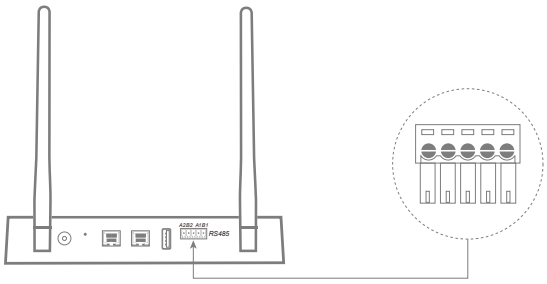


7.7.2 Grid type and applicable electricity meter

Grid Type	Description
Single Phase (230V)	DDSU-666(100A)
Split Phase (120V/240V)	DTSU-666 (3x100A)
Three Phase (230V/400V)	DTSU-666 (3x100A)
Three Phase (120V/208V)	DTSU-666 (3x100A)

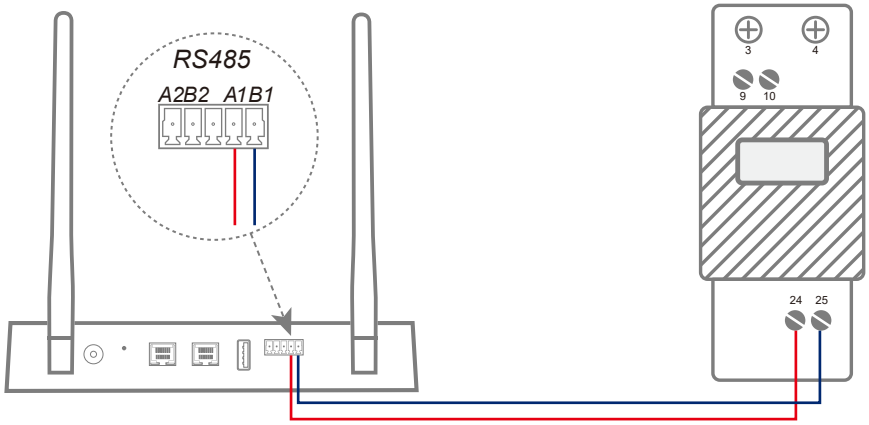
7.8 Appendix C: Guidelines for SLV RS485 Connection

The picture below indicates the RS485 A Port and B Port on SLV.

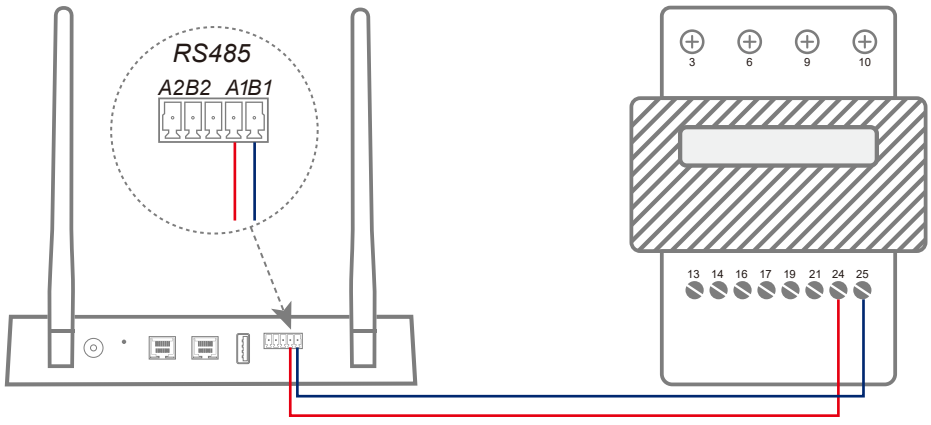


- Scenario 1: Solar system with only one DTU-SLV

a. For Chint Single Phase Meter

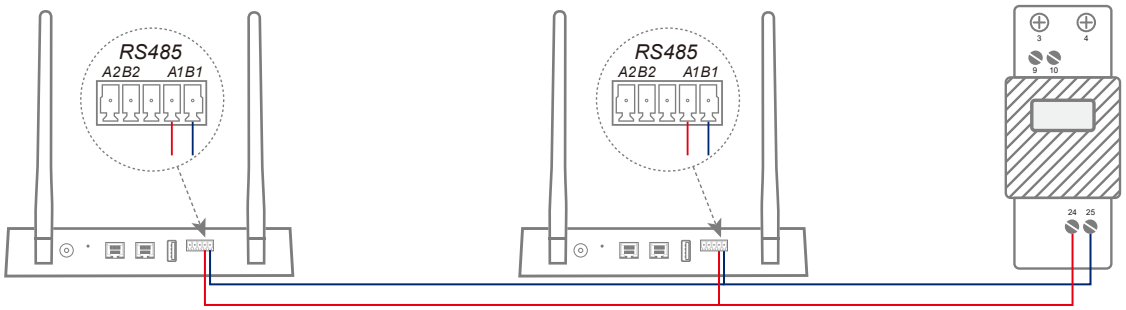


b. For Chint Three Phase Meter

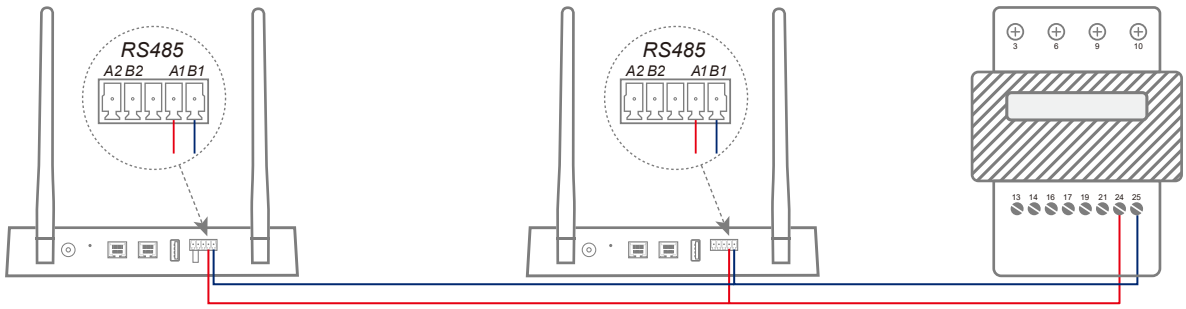


- **Scenario 2**: Solar system with multi DTU-SLV

a. For Chint Single Phase Meter



b. For Chint Three Phase Meter



8. End-user Login

Download the “My Solenso” app

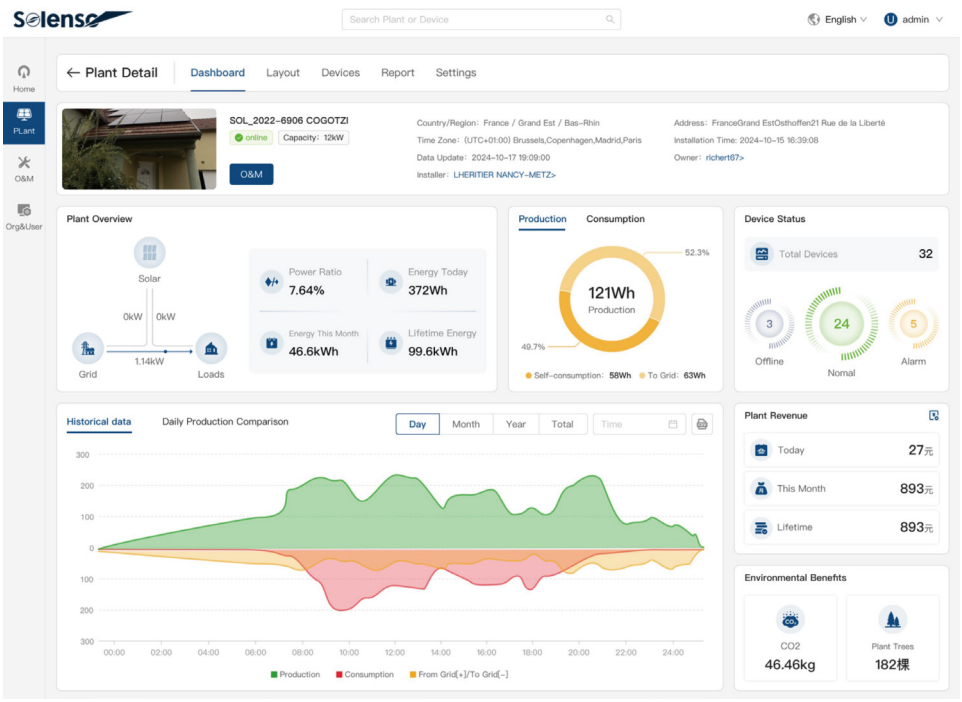
Android

IOS

2. Log in with the password and username that have been set up by installer.
3. Customers will be able to view all details once the data starts to upload. Normally it will take a few minutes for the first data to come through.
4. Customers can also view the microinverter generating details by accessing the our website at https://www.solenso-global.com

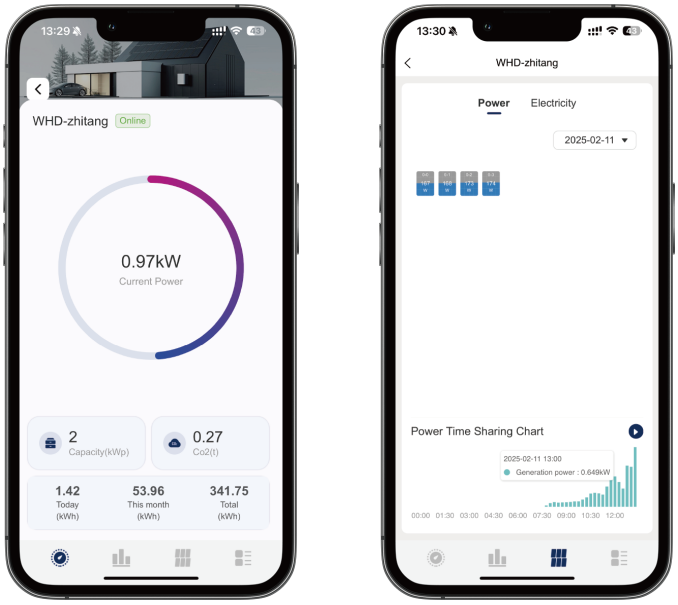
9. Browse the Web-Based Plant

Log in to your account and browse the web-based plant.



10. View Phone App

Download mobile phone app and view plant information.



11. LED Indicators

Power Supply	Normal: The green light is on constantly.	
	Abnormal: The light doesn‘t turn on.	
The power supply is normal and it will enter the network in 3 seconds.		
Network	Normal: The blue light is on constantly.	
	Abnormal: The blue light blinks every 1 second.	
Alarm	Microinverter search is incomplete, the red light blinks every 1 second.	
	Microinverter search is incomplete, DTU network is abnormal, cycling.	

12. Technical Data

Communicate with microinverters	Communication method	Sub - 1G
	Maximum Communication Distance (in Open Area)	400m
	Maximum communication microinverter quantity	100
Communicate with monitoring platform	Ethernet	RJ45*1, 100Mbps
	WIFI	IEEE 802.11b/g/n Wireless Transmission Protocol
Interface	USB	USB3.0 Standard Interface
	Bluetooth	Bluetooth 5.2 Connection Mode
	RS485	COM*2, 12500bps, Modbus - RTU
	DRM (For AU/NZ only)	RJ45 × 1, DRM0/5/6/7/8
Power supply data	AC Power Supply	110VAC - 277VAC, 50Hz - 60Hz
	DC Power Supply	12V/2A
	Power Consumption	1.0W
Mechanical Data	Operating ambient temperature	-25°C — +55°C
	Dimensions	200mm*120mm*30mm
	Class of protection	IP20